This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claims 1-11 (canceled).

Claim 12 (currently amended): An integrated system for rapid determination of a biochemical function of a protein or protein domain of unknown function comprising:

(A) a first computer algorithm capable of parsing ~~said~~ a target polynucleotide encoding a polypeptide of unknown function into at least one putative domain encoding region;

(B) a designated lab for expressing said putative domain;

(C) an NMR spectrometer for determining individual spin resonances of amino acids of said putative domain;

(D) a data collection device capable of collecting NMR spectral data, wherein said data collection device is operatively coupled to said NMR spectrometer;

(E) at least one computer;

(F) a second computer algorithm capable of assigning individual spin resonances to individual amino acids of a polypeptide;

(G) a third computer algorithm capable of determining tertiary structure of a polypeptide, wherein said polypeptide has resonances assigned to individual amino acids of said polypeptide;

(H) a database, wherein stored within said database is information about the structure and function of known proteins and determined proteins; and

(I) a fourth computer algorithm capable of determining 3D structure homology between the determined three dimensional structure of ~~a~~ said polypeptide of unknown function to three dimensional structure of a protein of known function, wherein said protein of known structure is stored within said protein database, wherein said ~~fourth computer algorithm determines said~~ structure of the polypeptide of unknown function is determined by an automated NOESY-Assign process.

Claim 13 (canceled).